Rediscovery of the Spinifex Sand-skipper (*Proeidosa polysema*) in the Darwin area, Northern Territory

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Abstract

The Spinifex Sand-skipper (*Proeidosa polysema*) (Lepidoptera: Hesperiidae) is recorded from two sites near Noonamah-Berry Springs, approximately 28 km south-east of Darwin. The species is recorded breeding on the grass *Triodia bitextura* (Poaceae) growing in eucalypt open-woodland in sandy soil derived from laterite. The butterfly had not been recorded from the Darwin area for more than a century (since 1909) and its presence in the rural area confirms earlier historical collections made by renowned entomologist F.P. Dodd.

Introduction

The Spinifex Sand-skipper (*Proeidosa polysema*) (Fig. 1), has a wide distribution across the northern half of Australia where it occurs in hummock open-grassland on sand dunes and eucalypt open-woodland with a hummock/tussock grass understorey on sand and dry rocky sandstone, preferring shallow gullies and slopes of hills (Braby 2016). The larvae (Figs 3–5) specialise on a limited range of perennial 'soft' resinous spinifex tussock-forming grasses (*Triodia* spp.) (Poaceae), which in the Top End of the Northern Territory include *T. microstachya* (Common & Waterhouse 1981) and *T. bitextura* (Braby 2015). The larvae construct distinctive tubular shelters by joining several blades of grass together with silk (Fig. 2); the entrance to the shelter is located at the bottom and the larva typically rests upside-down during the day, emerging at night to feed on the resinous leaf blades. During the dry season, especially in more arid areas when food quality declines, the larva does not feed and remain in diapause (Fig. 5) for many months. The larva also pupates in the final instar larval shelter.

In the Top End, the northern-most occurrences of *P. polysema* are Kakadu National Park (Nourlangie Rock) and the Robin Falls area, including the sandstone escarpment of the falls proper (MFB, pers. obs.) and the country behind the radio repeater station approximately 2 km north-west of the falls to the south of the Adelaide River township

Figs 1–5. *Proeidosa polysema* showing: **1.** adult male hilltopping on sand dune in central Australia at Curtin Springs, Northern Territory; **2.** larval shelter on *Triodia hitextura* at Wongalara Wildlife Station, Northern Territory; **3.** early instar larva on *T. microstachya* at Fish River Station, Northern Territory; **4.** final instar larva on *T. microstachya* at Fish River Station, Northern Territory; **5.** final instar larva in diapause on *T. pungens* at Curtin Springs, Northern Territory. (Michael Braby)

(Meyer *et al.* 2006). Historical records further north in the Darwin area ('Port Darwin') have been dismissed or considered to require confirmation because of the lack of subsequent records for over a century. Indeed, Meyer *et al.* (2006: 15) stated that: "We believe it is unlikely that it will be encountered there in the future, due to a lack of suitable habitat."

Waterhouse (1933) and Meyer *et al.* (2006) reviewed the historical literature records of *P. polysema* from the Darwin area and noted that at least five specimens were collected from Port Darwin by F.P. Dodd at the turn of the twentieth century: two males (both paratypes) in February 1909, other males in January and March, and a female in April. It has generally been assumed that the material was collected further south, possibly along the railway line such as between Adelaide River and Pine Creek, and that Port Darwin was the location at which the specimens were processed. In this note, we record an extant population of *P. polysema* from the outer Darwin rural area. Prior to our rediscovery of

the species near Darwin, the butterfly had not been recorded from the area for more than a century.

Observations

At the intersection of Finn Road and Middle Arm Road, approximately 6.5 km north of Berry Springs (12.6451°S, 131.0099°E), an adult of *Proeidosa polysema* in 'fresh' condition

Figs 6–11. Ecology of *Proeidosa polysema* near Berry Springs-Noonamah, Darwin: **6.** breeding habitat comprising eucalypt open-woodland with a grassy understorey dominated by *Triodia bitextura*; **7.** larval food plant *Triodia bitextura*; **8–11.** adult butterfly being eaten by preying mantis. (Michael Braby)

(according to extent of wing wear) was observed just after midday feeding on the flowers of *Spermacoce* sp. on 14 February 2015. The specimen was observed only briefly before it was disturbed; it rapidly flew off and could not be relocated despite extensive searching. However, another adult was subsequently located nearby and photographed; however, this particular individual was being eaten by a preying mantis (Figs 8–11). After this insect predator had completed devouring its meal, two of the wings of the butterfly were recovered and retained as vouchers (accession number MFBC 00934, Australian National Insect Collection). The identity of the butterfly can be clearly discerned by the uniform brown ground colour to the wings and the presence of a series of eight large white spots on the underside of the hindwing (Fig. 8). The habitat in which these observations were made comprised an open disturbed area of pioneer plants adjacent to the railway line. There were no signs of the putative larval food plant (*Triodia bitextura*) growing in the immediate vicinity.

Two months after these initial field observations, we searched the adjacent woodland for presence of the larval food plant and likely breeding areas of the butterfly on 26 April 2015. On Middle Arm Rd, approximately 6 km north-north-east of Berry Springs and 6.4 km west-south-west of Noonamah (12.6456°S, 131.0233°E), we found *Triodia bitextura* (voucher JOW 4802, Darwin Northern Australia Herbarium) growing in abundance in open-woodland with a dense grassy understorey in sandy soil derived from well-drained laterite on relatively flat terrain (Fig. 6). On one particular tussock (Fig. 7), two old pupal shelters of *P. polysema* were recorded and collected, confirming the presence of an extant breeding site. This site was located approximately 1.5 km east of the site where adults were initially recorded earlier in February 2015. The breeding habitat was located approximately 28 km south-east of Darwin.

Discussion

Our discovery of *Proeidosa polysema* from the Darwin area near Noonamah and Berry Springs validates the historical records from 'Port Darwin' by Dodd as being reliable. Moreover, a distribution map of the larval food plant *Triodiabitextura* for the Darwin area (Fig. 12) shows that this plant is widespread but uncommon in the Darwin rural area, extending as far

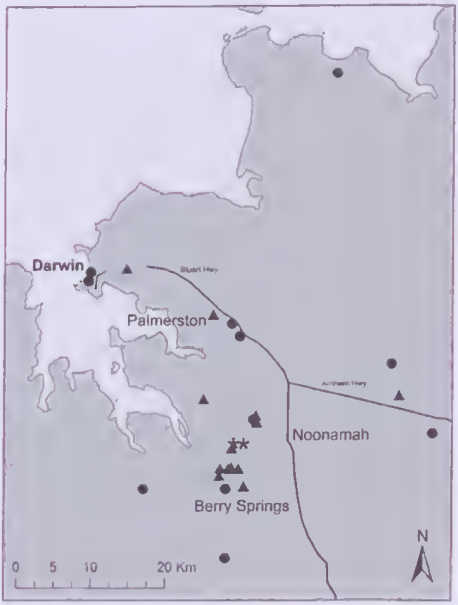

Fig. 12. Distribution map of *Triodia bitextura* in the Darwin area, together with the two extant sites of *Proeidosa polysema* (★). Symbols for plant data are as follows: ● vouchered herbarium specimens, ▲ survey observations. (Flora and Fauna Division)

north as Gunn Point. In our experience, *T. bitextura* has a scattered occurrence and in some areas it may be locally abundant. *Triodia bitextura* (Fig. 7) does not exhibit the large hummock forming habit typical of 'hard' spinifex species, and as such it is less conspicuous. Moreover, it is not confined to sandstone outcrops, which may explain the belief of Meyer *et al.* (2006) that the butterfly does not occur in the Darwin area due to lack of suitable habitat. At the Noonamah-Berry Springs site the butterfly was breeding on plants growing on sandy soil derived from laterite in contrast to the general tendency of *P. polysema* to breed on sand dunes and sand derived from rocky sandstone. The spatial distribution of *T. bitextura* suggests the butterfly may well occur in other locations near Darwin, particularly in the rural area to the south and south-east of Palmerston (Fig. 12). However, little habitat now remains closer to the city of Darwin, but it seems highly plausible that in 1909 Dodd collected the original specimens not far from his base camp in Parap (see also Braby & Nielsen 2011 for an account of Dodd's collecting sites in the Darwin region), rather than along the railway line to the south of Adelaide River.

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